What Is Claimed Is:

1. A method for recombinantly and transiently producing a polypeptide in a plant tissue, comprising:

i) providing a plant tissue sample in a bioreactor;

ii) adding a sample of Agrobacterium containing a nucleotide sequence encoding the polypeptide to the plant tissue sample;

iii) mixing the plant tissue sample with the Agrobacterium so that the nucleotide sequence is transferred to the plant;

iv) allowing the plant tissue to transiently express the polypeptide; and

v) separating the polypeptide from the mixture.

2. The method according to claim 1, wherein the bioreactor contains from about 50 ml to about 1,0000 liter of cells.

3. The method according to claim 1, wherein said plant tissue sample is a plant cell or algal cell suspension culture.

4. The method according to claim 1, wherein said plant tissue sample is a root culture.

5. The method according to claim 1, wherein said Agrobacterium is *Agrobacterium tumefaciens* or *Agrobacterium rhizogenes*.

6. The method according to claim 1, wherein said plant is a dicot or a monocot.

7. The method according to claim 6, wherein said dicot is tobacco, potato, bean or soybean.

8. The method according to claim 6, wherein said monocot is corn.

9. The method according to claim 1, wherein the Agrobacterium is an auxotroph.

10. The method according to claim 9, wherein the auxotroph is deficient in its ability to metabolize amino acids, vitamins, and/or nucleic acid precursors.

11. The method according to claim 1, wherein the polypeptide is a protein.

12. The method according to claim 11, wherein said protein is an antibody or enzyme.

13. The method according to claim 1, comprising monitoring or controlling the bioreactor environment.

14. The method according to claim 13, comprising monitoring or controlling any one of pH, optical density, temperature, media nutrient levels, dissolved oxygen levels, and polypeptide expression levels.

15. The method according to claim 1, wherein the Agrobacterium is added to plant culture at about 7 to about 14 days of the plant culture or at a plant biomass concentration of about 30 g DW/L.

16. The method according to claim 1, wherein the length of time for reaction between the plant culture and Agrobacterium is about 1 to about 4 days.

17. The method according to claim 1, wherein about 100 mg of the polypeptide is obtained from about a 100 liter volume of cells.

18. The method according to claim 14, comprising controlling the pH to about 4.9 to about 6.1.

19. The method according to claim 13, comprising adding an Agrobacterium DNA transfer activator to the mixture of plant culture and Agrobacterium culture.

20. The method according to claim 19, wherein the activator is acetosyringone or syringaldehyde.